

**WASHINGTON STATE DEPARTMENT OF ECOLOGY
POST OFFICE BOX 47600
OLYMPIA, WASHINGTON 98504-7600**

IN THE MATTER OF

**United States Department of Energy
Waste Treatment Plant
3000 George Washington Way
Richland, WA. 99352**

]
] **NO. PSD-02-01**
]
]
] **FINAL APPROVAL**
] **OF PSD APPLICATION**

Pursuant to the United States Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40, Code of Federal Regulations, Part 52 and regulations set forth in the Washington Administrative Code 173-400-141 and based upon the complete Notice of Construction Application (NOC) submitted by The United States Department of Energy on January 8, 2002, additional information submitted on April 1, 2002, and the technical analysis performed by the Department of Ecology (the department), now finds the following:

FINDINGS:

1. The United States Department of Energy proposes to modify their existing facility (Hanford) located in Richland, Washington.
2. This project consists of adding a pretreatment plant, a Low Activity Waste (LAW) vitrification plant, a High Activity Waste (HLW) vitrification plant, five steam generating boilers, four hot water boilers, a diesel fire pump, and six emergency diesel generators.
3. This project is subject to New Source Performance Standards (NSPS): 40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units).
4. Hanford is an existing major stationary source that emits more than 250 tons of a regulated pollutant per year.
5. This project qualifies as a major modification because nitrogen oxides (NO_x) have "significant" emission increases that are greater than 40 tons per year.
6. The emissions of all other air pollutants from the proposed modification are subject to review under Chapter 173-400 and 460 WAC by the Washington State Department of Ecology Nuclear Waste Program.

7. The United States Department of Energy has elected to take a federally enforceable limit on the number of hours 5 steam generating boilers, 4 hot water boilers, a diesel fire pump and 6 emergency diesel generators will operate each year.
8. The project will result in a potential to emit up to 156.9 tons of NO_x per year.
9. A caustic scrubber has been determined to be Best Available Control Technology (BACT) for the control of NO_x emissions from the pre treatment facilities.
10. Selective Catalytic Reduction (SCR) has been determined to be BACT for the control of NO_x emissions from the LAW vitrification plant.
11. SCR has been determined to be BACT for the control of NO_x emissions from the HLW vitrification plant.
12. Low NO_x burners plus flue gas recirculation has been determined to be BACT for the control of NO_x emissions from the steam and hot water plant.
13. Reduced operation and an on-road diesel fuel with a maximum sulfur content of 0.05% has been determined to be BACT for the control of NO_x emissions from the emergency generators.
14. Reduced operation and an on-road diesel fuel with a maximum sulfur content of 0.05% has been determined to be BACT for the control of NO_x emissions from the diesel fire pump.
15. The project is located in an area that has been designated Class II for the purposes of PSD evaluation. The nearest Class I Areas are identified in Table 1 below:

Class I Area	Distance
Alpine Lakes Wilderness Area	85 mi. (137 km)
Goat Rocks Wilderness Area	88 mi (142 km)
Mt. Adams Wilderness Area	95 mi (153 km)
Mt. Rainier National Park	95 mi (153 km)
Eagle Cap Wilderness Area	115 mi (185 km)

Table 1

16. The project is located in an area that is currently designated in attainment for all national air quality standards and all state air quality standards.
17. The ambient impacts of the proposed increase in emissions were determined with the EPA's Industrial Source Complex Short-Term Model Version 3 (ISCST3).

18. Table 2 below, identifies the Class I NO_x modeling results as compared to the Modeled Significance Level (MSL). The units are in micrograms per cubic meter (µg/m³).

Averaging Period	Alpine Lakes Wilderness Area	Goat Rocks Wilderness Area	Mt. Adams Wilderness Area	Mt. Rainier National Park	Eagle Cap Wilderness Area	Maximum modeled concentration	MSL
24-hour	0.00277	0.00198	0.00179	0.00309	0.00533	0.083	1

Table 2

19. NO_x emissions from this project are below the Class I modeling significance levels; therefore an increment analysis was not performed.

20. The project will have no significant impact on ambient air quality.

21. The project will not have a noticeable effect on industrial, commercial, or residential growth in the Richland area.

22. Visibility, deposition and other air quality related values are not expected to be significantly impaired at the Alpine Lakes Wilderness Area, Goat Rocks Wilderness Area, Mt. Adams Wilderness Area, Mt. Rainier National Park, or the Eagle Cap Wilderness Area.

23. The department finds that all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.

APPROVAL CONDITIONS:

1. Emissions of NO_x from the LAW vitrification plant shall not exceed 54.0 parts per million dry by volume (ppmdv) at 15% oxygen (O₂) over a 24 hour averaging period and 7.5 tons per year on a 12 month rolling average.
2. Emissions of NO_x from the HLW vitrification plant shall not exceed 10.0 ppmdv at 15% O₂ over a 24 hour averaging period and 1.3 tons per year on a 12 month rolling average.
3. Each of the 5 steam generating boilers shall not exceed 7,008 hours per year on a 12 month rolling summation calculated once per month.
4. Each steam generating boiler shall be fired by an on-road diesel fuel with a maximum sulfur content of 0.05%.
5. Emissions of NO_x from each steam generating boiler shall not exceed 140 ppmdv at 3% O₂ and 27.4 tons per year on a 12 month rolling average.
6. Each of the 4 hot water boilers shall not exceed 2,628 hours per year on a 12 month rolling summation calculated once per month.

7. Each hot water boiler shall be fired by an on-road diesel fuel with a maximum sulfur content of 0.05%.
8. Emissions of NO_x from each hot water boiler shall not exceed 140 ppm_{dv} at 3% O₂ and 11.0 tons per year on a 12 month rolling average.
9. Each of the 6 emergency generators shall not exceed 24 hours per year on a 12 month rolling summation calculated once per month.
10. Each emergency generator shall be fired by an on-road diesel fuel with a maximum sulfur content of 0.05%.
11. Emissions of NO_x from each emergency generator shall not exceed 1,253 ppm_{dv} at 15% O₂ and 0.6 tons per year on a 12 month rolling average.
12. The diesel fire pump shall not operate for more than 35 hours per year on a 12 month rolling summation calculated once per month.
13. The diesel fire pump shall be fired by an on-road diesel fuel with a maximum sulfur content of 0.05%.
14. Within 180 days of startup, initial compliance for Approval Conditions 1 and 2 shall be determined in accordance with 40 CFR 60, Appendix A, Method 7E, except that, the instrument span shall be reduced as appropriate.
15. Within 180 days of startup, initial compliance for all units covered in Approval Conditions 5, 8, and 11 shall be determined in accordance with 40 CFR 60, Appendix A, Method 7E, except that, the instrument span shall be reduced as appropriate.
16. Compliance with Approval Condition 1 and 2 shall be monitored by a Continuous Emission Monitor (CEM) for NO_x, O₂ and a flow meter. The CEM's must meet Performance Specifications 2, 3, and 6 of 40 C.F.R. Part 60, Appendix B and quality control/quality assurance requirements of 40 C.F.R. Part 60, Appendix F.
17. Compliance with Approval Condition 4, 7, 10, and 13 shall be monitored by maintaining and submitting records of fuel purchases.
18. Compliance with Approval Condition 3, 6, 9, and 12 shall be monitored by installing and operating nonresetable totalizers on each boiler, each generator and the diesel fire pump.
19. Compliance with Approval Condition 5 and 8 shall be monitored by annual source testing in accordance with 40 CFR 60, Appendix A, Method 7E, except that, the instrument span shall be reduced as appropriate.

- 167 20. The short-term NO_x emission concentrations (ppm) do not apply during startup, shutdown.
168 Startup for all emission units will be defined in the operation and maintenance manual
169 (O&M) discussed in Condition 22 below.
170
- 171 21. The United States Department of Energy shall report the following monitoring data to the
172 Department of Ecology's Nuclear Waste Program.
173
- 174 a) Submit the performance test data from the initial performance test and the
175 performance evaluation of the CEM's using the applicable performance specifications
176 in 40 C.F.R. Appendix B.
177
 - 178 b) Submit copies of each source test performed on emission units regulated by this
179 order.
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 - 181 c) Submit a report semiannually, or on another approved reporting schedule, and in the
182 format approved by the department, including the following:
183
 - 184 i) Calendar date or monitoring period,
 - 185 ii) Total operating hours from each unit required to do so in Approval Condition
186 18 above,
 - 187 iii) Total NO_x emissions for each regulated unit summed on a 12 month rolling
188 average, and
 - 189 iv) Identification of any days for which NO_x CEM data were not obtained,
190 including reasons for not obtaining sufficient data and description of
191 corrective actions taken.
192
 - 193 d) In addition, each semiannual report shall include:
194
 - 195 i) Days for which data was not collected,
 - 196 ii) Reasons for which data was not collected,
 - 197 iii) Identification of times when the pollutant concentration exceeded the span of
198 the CEM,
 - 199 iv) Description of any modifications to the CEM system that could affect the
200 ability of the system to comply with Performance Specifications 2, 3, or 6 and
201 Results of any CEM drift tests.
202
 - 203 e) In addition, the United States Department of Energy shall maintain monitoring
204 records on site for at least five years, and shall submit:
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 - 206 i) Excess emission reports to the Department of Ecology Nuclear Waste
207 Program, as appropriate and
 - 208 ii) Results of any compliance source tests.
209
- 210 22. Within 90 days of startup the United States Department of Energy shall identify operational
211 parameters and practices that will constitute proper operation of LAW vitrification plant, the

Final Approval
Waste Treatment Plant
July 8, 2002

HLW vitrification plant, the steam boilers, the hot water boilers and the emergency generators. These operational parameters and practices shall be included in an O&M manual for the facility. The O&M manual shall be maintained and followed by the United States Department of Energy and shall be available for review by state, federal and local agencies. Emissions that result from a failure to follow the requirements of the O&M manual may be considered credible evidence that emission violations have occurred.

23. Any activity, which is undertaken by the company or others, in a manner, which is inconsistent with the application and this determination, shall be subject to enforcement under the applicable regulations.

24. Access to the source, by the EPA, state, and local regulatory personnel, shall be permitted upon request for the purposes of compliance assurance inspections. Failure to allow such access is grounds for an enforcement action.

25. This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of the final approval, or if construction of the facility is discontinued for a period of eighteen (18) months, unless the department extends the 18 month period, pursuant to 40 C.F.R. 52.21(r)(2) and applicable EPA guidance.

Reviewed by:

Richard B. Hibbard, P.E.
Engineering and Technical Services
Washington State Department of Ecology

DATE:_____

Approved by:

Mary E. Burg
Program Manager, Air Quality Program
Washington State Department of Ecology

DATE:_____